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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/580,874	05/30/2000	Michel Ladang	192592USONPP-CONT	1709
22850	7590	11/05/2003		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER GOFF II, JOHN L	
			ART UNIT 1733	PAPER NUMBER

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/580,874

Applicant(s)

LADANG ET AL.

Examiner

John L. Goff

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 13 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10, 13, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/16/03 (Amendment D) has been entered. The previous 35 USC 112 rejections have been overcome.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. Claims 10, 13, 15, and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification (page 5, lines 15-29) discloses a method for expanding a sheet of polyolefin foam only in its thickness wherein the method comprises a first step of surface crosslinking the faces of the sheet followed by an additional expanding and crosslinking the step. The specification teaches the surface crosslinking blocks the expansion in the other two directions other than the thickness. However, it is unclear how merely surface crosslinking both

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faces of the polyolefin sheet results in the foam sheet expanding only in its thickness. Tsujimoto et al. is cited as an example of applicants method wherein a sheet of polyolefin foam has both of its faces surface crosslinked followed by an additional expanding and crosslinking step.

However, Tsujimoto et al. teaches the sheet expands in two directions, its thickness and width.

Thus, in view of the prior art it is unclear how applicant achieves expansion in only one direction performing a method that is substantially the same as that taught by the prior art. Applicant is asked to clarify how the unidirectional expansion only in the thickness of the sheet occurs and if additional steps other than surface crosslinking are required.

4. Claims 10, 13, 15, and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 10 requires providing a sheet of polyolefin foam, surface crosslinking the faces of the sheet, and expanding and crosslinking the sheet in an additional step to form a polyolefin sheet having expansion only in its thickness. It is unclear how merely surface crosslinking both faces of the polyolefin sheet results in the foam sheet expanding only in its thickness as it appears to be known in the art to surface crosslink both faces of a polyolefin foam sheet prior to expansion. However, in the known method the sheet expands in two directions not in only one direction (See Tsujimoto et al.). Applicant is asked to clarify how the unidirectional expansion only in the thickness of the sheet occurs and if additional steps other than surface crosslinking are required.

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5. Claims 10, 13, 15, and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "essentially" in claim 10 is a relative term which renders the claim indefinite. The term "essentially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear what is required by "an essentially unidirectional expansion". The specification discloses no reference to what is required by the term "essentially". Specifically, what percentage of expansion must occur in one direction (as opposed to the other two directions) for the expansion to be considered unidirectional?

Claim Rejections - 35 USC § 102

7. Claims 10 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsujimoto et al. (JP 04213341 and the English translation).

Tsujimoto et al. disclose a method for producing a crosslinked polyolefin foam sheet. Tsujimoto et al. teach a foam sheet comprising polyolefin (e.g. polyethylene, ethylene copolymer, etc.), crosslinking agent, and foaming agent. Tsujimoto et al. teach providing an unsupported, intermediate polyolefin foam sheet, surface-crosslinking both faces of the sheet (i.e. the degree of surface crosslinking is different from the sheets core) in a direction perpendicular to a direction of expansion, and then heating the sheet to expand (foam) and crosslink the sheet throughout (See paragraphs 33 and 34 of the translation). It is noted Tsujimoto et al. teach the sheet expands in two directions, the thickness and width. However, it

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is noted the sheet expands 250% in the thickness and 78% in the width such that the polyolefin foam sheet taught by Tsujimoto et al. undergoes an "essentially" unidirectional expansion in its thickness and thus, Tsujimoto et al. anticipates the claims. Furthermore, it is noted the method taught by Tsujimoto et al. is the same as that taught/claimed by applicant, and thus, one of ordinary skill in the art at the time the invention was made would have readily expected the results of both applicant's invention and Tsujimoto et al. to be the same, i.e. "essentially" unidirectional expansion of the sheet in its thickness.

Regarding claim 15, Tsujimoto et al. teach the foam sheet comprises at least 20% by weight of a polyethylene (See paragraphs 33 and 34 of the translation).

Claim Rejections - 35 USC § 103

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto et al. as applied above in paragraph 7, and further in view of Hitchcock (U.S. Patent 5,087,395).

Tsujimoto et al. as applied above teach all of the limitations in the claim except for a specific teaching on expanding the foam in a continuous operation. However, one of ordinary

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skill in the art at the time the invention was made would have readily appreciated producing the crosslinked and foamed sheet taught by Tsujimoto et al. using a continuous process as it was well known in the art to do so as shown by Hitchcock and only the expected results would be achieved, i.e. increased production greater than that achieved by a batch process.

Hitchcock is directed to the continuous expansion of a sheet of polyolefin foam. Hitchcock teaches a mixture of a thermoplastic resin (preferably polyethylene or an ethylene copolymer), a heat-decomposable blowing agent, and a crosslinking agent extruded into a desired shape such as a sheet (Column 4, lines 15-20 and 39-41). The surface of the sheet is further crosslinked offline by a suitable radiation source with the crosslinking occurring perpendicular to a direction of expansion of the foam (Column 1, lines 23-27 and Column 2, lines 59-63). The crosslinked sheet is fed to a preheating chamber and is raised to a temperature such that the sheet begins to foam and crosslink (due to the crosslinking agent) when passed into the foaming chamber (Column 2, lines 55-59 and Column 3, lines 42-47). The sheet undergoes expansion in its thickness while in the foaming chamber to form a foamed sheet (Figure 1 and Column 3, lines 42-47). The mixture of resin, blowing agent, and crosslinking agent is essentially ethylene copolymer or at least 20% by weight polyethylene (Column 5, lines 30-35 and Column 6, lines 22-27).

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto et al. as applied above in paragraph 7, and further in view of Hurley et al. (U.S. Patent 5,883,145).

Tsujimoto et al. as applied above teach all of the limitations in claim 16 except for a teaching on forming the polyethylene or ethylene copolymer by metallocene catalysis with a density of at most 0.92 g/cm^3 . It is noted Tsujimoto et al. suggest in an exemplary embodiment

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to use low density polyethylene (density of 0.92). However, Tsujimoto et al. are not limited to any particular polyethylene. Hurley et al. are directed to manufacturing crosslinked polyolefin foam. Hurley et al. teach that it was known in the art to form polyolefin foams of very low density polyethylene (VLDPE) (density of 0.88 to 0.92 g/cm³) when a flexible foam is desired (Column 1, lines 52-58). However, these known foams tend to be of low quality due to melt fracture (Column 1, lines 61-64). The melt fracture occurring due to forming the VLDPE with a low molecular weight (Column 1, lines 58-61). Hurley et al. teach using metallocene catalysts as a means to form VLDPE of a controlled molecular weight ensuring the molecular weight of the VLDPE is high enough to preclude melt-fracture (Column 2, lines 16-22 and 52-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the polyethylene taught by Tsujimoto et al. a conventional polyethylene such as VLDPE formed using a metallocene catalyst as suggested by Hurley et al. to form a high quality flexible polyethylene (density of 0.88 to 0.92 g/cm³) foam that is not subject to melt fracture.

Response to Arguments

11. Applicant's arguments filed 8/25/03 have been fully considered but they are not persuasive. Applicant argues Tsujimoto et al. do not teach both surfaces of the polyolefin sheet are crosslinked. It is noted Tsujimoto et al. do teach both surfaces of the polyolefin sheet are crosslinked (See paragraphs 33 and 34 of the translation).

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Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **703-305-7481** (after December 2003 the telephone number will be 571-272-1216). The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



John L. Goff



JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300